# Volvo Cars: Visualization and reporting of waste data

Volvo Cars has ambitions sustainability targets, with the three focus areas of Climate Action, Circular Business and Ethical and Responsible Business. At the same time, new EU directives such as Corporate Sustainability Reporting Directive (CSRD) are setting higher requirements on sustainability data quality and reporting. To support the Circular business area and new regulatory requirements, Volvo wants to increase efficiency in the data collection and analysis process of waste data in Torslanda Eastern area (outside of the plant area). Volvo Cars needs your support to summarize, visualize and present large data sets that can change over time to support both reporting and performance improvement work (especially increasing the recycling rate).

Each quarter, a waste report is generated by Stena recycling with a high complexity and variance of waste data and pick up locations. Today, a lot of manual work and interpretation is needed to make the data useable for reporting purposes. Volvo Cars wants your help to visualize the data and create standard reports each quarter.

## Raw data and information

### *Volvo Cars Waste data-Stena Recyling report\_2023*: Raw data from Stena

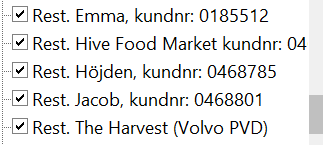
* + This file contains 2023 data, but the raw data files will only have one quarter at a time

### *Volvo Cars Waste data-Support data*: Supporting data and information

### *849M0001-Fastighetsägarkarta*: Supporting map on buildings in scope

### Volvo Cars Waste data-Stena Recyling report\_2023

#### Exclusions

These exclusions applies for all further data management and reports.

* *Hämtställe*: include only pick up locations that includes the text “Göteborg” and “Lammhult”
* *Hämtställe märkning*: Exclude restaurants (external operations from Volvo Cars):


* *RodKodBeskr:* -1 N/A: no waste streams

#### Waste streams and treatment method

* Artikel: What type of waste fraction
* RodKodBeskr: How each waste fraction is treated, please summarize the different parts to get the total values for landfill, incineration with energy recovery and recycled waste
  + Landfill = D1 Landfill + D10 Without energy recovery + D9 Without energy recovery
  + Incineration with energy recovery = R1 With energy recovery
  + Recycled waste = R11 Recycled, incl metal scrap + R13 Recycled, incl metal scrap + R3 Recycled, incl metal scrap + R4 Recycled, incl metal scrap + R5 Recycled, incl metal scrap + R9 Recycled, incl metal scrap (and other “R” codes that may appear)
* Farligt avfall: if the waste is hazardous or not (JA/NEJ = YES/NO)
* Kvantitet kg: waste quantity in kg

## Desired outcome

Volvo Cars wants your help to visualize the data and create standard reports from the raw data files from Stena each quarter. Volvo should be able to upload the *Volvo Cars Waste data-Stena Recyling report\_2023* into your solution, which will generate a visualization map, four standard reports and improvement work.

### Visualization map

* Utilize the addresses in *Volvo Cars Waste data-Stena Recyling report\_2023* column *Hämtställe Gatuadress* to locate where the pick-up locations are, and visualize the name of each pick up locations by usingcolumn *Hämtställe Märkning* in the same file
* When no address is given or specific enough, utilize *Hämtställe Märkning* to identify relevant building with optional solution method.
  + Utilize either Google Maps to identify location of building, Excel *Volvo Cars Waste data-Support data,* sheet *List of buildings Torslanda Ö,* *849M0001-Fastighetsägarkarta* or other own solution
  + Descriptions may include more than building name, such as “RA FNI 2 Östra”, this means that the pick-up location is close to the building called RA
  + For locations that cannot be visualized, summarize waste into a pickup location named “Pick-up location not found”

In the map, show total waste for each pick up location, recycling rate [%] for the relevant period and other relevant Key Performance Index (KPI). If you press the pick up location, a trend view should be shown, indicating the historical total waste and recycling rate per period. Make the map interactive and easy to understand with appropriate color coding, visualize hotspots/bad recycling rates etc.

### Four standard reports (table format)

Make four summary reports (with the described exclusions above) of report data below for

(i) each pick-up location

(ii) each classification of pick up locations, see Excel *Volvo Cars Waste data-Support data* sheet *Classification\_pick up locat* (Red market cells are restaurants to be excluded, see chapter *exclusions*

(iii) the sum of the buildings RA, RB & Lammhult (pick up locations containing RA or RB: Byggnad RB, Projekt RA, RA 1:an, RA 2:an, RA FNI 2 Östra, RA FNI 3 Södra, Volvo RA, TIR, Externlager Lammhult), as this is one site

(iiii) all pick up locations excl. RA, RB & Lammhult

#### Report data

Use relevant filters to summarize column *Kvantitet kg* in Excel *Volvo Cars Waste data-Stena Recyling report\_2023*

* Total waste [kg]

*Non-recycled waste*

* + Incineration with heat recovery (not hazardous)
  + Landfill (not hazardous)
  + Hazardous waste incineration with heat recovery
  + Hazardous waste to landfill

*Recycled waste*

* + Recycled waste (not hazardous)
  + Hazardous recycled waste

### Improvement work

Develop your own solution to support improvement work. For example by analyzing the data and non-recycled waste fractions, using the translation and classification of waste streams (excel *Volvo Cars Waste data-Support data* sheet *Classification\_Waste type* and the column *Simplified waste stream)*, abnormalities (spikes in trends, new waste fractions) or other solutions to guide improvement work. Please use the details from Visualization map to understand how data will be presented and what KPIs to base your improvement work on. Use Four standard reports (table format)to get inspiration of how to structure the data. A useful follow up report is *Report data* excluding waste fractions containing PCB (Polyklorerade bifenyler), Asbest, tjärasfalt, Betong IFA (icke farligt avfall), 3691 Asfalt, bygg & riv that goes to landfill, which are waste streams that must be incinerated or landfilled and therefore cannot be improved.